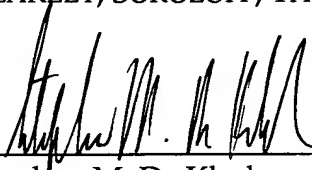


REMARKS

If there are any additional charges, please charge Deposit Account No. 02-2666.

Respectfully submitted,

BLAKELY, SOKOLOFF, TAYLOR & ZAFMAN LLP



Dated: March 9, 2005

\_\_\_\_\_  
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system formed thereby.

In accordance with a second aspect of the present invention there is provided an automation system for a distributed industrial system, comprising a plurality of software agents adapted to implement specific functions used for information management, condition monitoring and real-time control in a co-ordinated manner.

Advantageously, these agents, and sometimes all of the agents in the system, can be controlled and managed by agent platforms and local directories.

An agent is a programable to perceive and react to changes in its environment. It is capable of acting in an autonomous and goal-directed manner, so that the actions of an agent are not caused only by inputs from the environment, but by the goals or desires of the agent. This is in contrast to a standard computer program, whose actions are determined only by direct manipulation (e.g. clicking on icons) by users or commands from other programs. Therefore agent-based architectures can be much more flexible than standard architectures.

A plurality of different types of agent can be used, including Information Retrieval Agents, Database Agents, Device Agents and Plant Agents/Control Agents, supported by multi-agent technology and mobile agents

Ontology is an explicit semantic representation of concepts. Ontology defines vocabularies, which are related to applications, for the course of communication, information query and assertion among agents. An Ontology Database can be used to store these vocabularies and an ontology agent may be implemented for update, insertion and routine maintenance of the ontology database.

Mobile agents may be used as an additional communications mechanism between the user agent and information providing agents (“information providing agent” refers to any agent providing information, for example the plant agents and database agents).

A mobile agent is a program able to transport itself from one place to another

applied:

AP: Agent platform, A server or set of servers on which agents can execute.

The AP provides messaging and directory facilities for the agents.

A CL: FIPA Agent Communication Language. A standard language used for communication between software agents.

App. A: Application Agent. These agents perform tasks such as knowledge management, alarm/event handling etc., depending on the needs of particular locations or applications.

CA: Control (device) Agent. This agent controls a device.

DB: Database.

DBA: Database Agent. This agent allows others to query the real-time database.

DocA: Document Agent. This agent provides access to a document collection.

DTA: Data Transport Agent. This agent acquires data from the IEDs and stores it into the real-time database. This is an additional functionality to the database agent, which allows only database queries. This task is not performed by the control agents in order to reduce the load on these agents. If data transport functionality is provided by the IEDs, SCADA or HMI system, this agent is not required. The DTA may either be resident on the agent platform or outside (on the diagram it is shown inside the AP).

OntoDB: Ontology Database used to store the vocabularies which are related to applications.

OA: Ontology Agent. This agent is used to update and manage the ontology database.

**FIPA:** Foundation for intelligent Physical Agents. A standards organisation for multi-agent systems.

**GUI:** Graphical User Interface.

**HMI:** Human-Machine Interface.

**HTTP:** Hypertext Transfer Protocol. The protocol used for transmitting Web pages.

**IED:** Intelligent Electronic Device. A control or monitoring device containing an embedded processor

**IP:** Internet used for network packet delivery on the Internet. IP is normally used in combination with TCP or UDP.

**IPMT:** Internal Platform Message Transport. An acronym used by FIPA to denote whatever transport protocol is used for message transport within a FIPA platform. Many FIPA platforms use Java RMI as the IPMT.

**JDBC:** Java Database Connectivity.

**LAN, WAN:** Local Area Network, Wide Area Network.

**Local directories.** The local directories are used to assist agents in locating each other. Agents that provide a service register with a directory. Client agents (the user agent, mobile agents and possibly other agents) can then use the directory to locate services that match their requirements. The DF (Directory Facilitator) is a standard component of a FIPA agent platform, and provides such a directory service.

**DF:** Directory Facilitator.

**MA, MA Host** mobile Agent, Mobile Agent Host.

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